

# Chlamydial urethral infection in Teheran

## A study of male patients attending an STD clinic

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**SUMMARY** The prevalence of chlamydial infection of the urethra was studied in 172 consecutive male patients attending a sexually transmitted disease clinic in Teheran. *Chlamydia trachomatis* was isolated in 8.8% of the patients with a valid culture result. Of the five isolates serotyped, two were serotype E and three were serotypes G, H, and K. Type-specific antibodies against *C trachomatis* serotypes D to K were found in 16% of patients, and IgM, indicating current infection, was detected in 12%. Type-specific antibodies against serotypes A to C (trachoma agent) were detected in 5.4%.

The low chlamydial isolation rate may have been due to the inclusion of a large number of patients with a mild or trivial urethritis or a history of previous treatment with antichlamydial drugs.

The results indicate that in Iran where trachoma is still endemic, chlamydial infection of the urethra does occur in the urban population and is caused by serotypes D to K.

### Introduction

In the developing countries of the Middle East very little is known about the prevalence and patterns of sexually transmitted diseases (STD).<sup>1</sup> In particular, there is a lack of information about non-gonococcal urethritis (NGU) and chlamydial genital infection.

During our studies of trachoma in rural populations of northern and southern Iran we found that trachoma caused by *Chlamydia trachomatis* serotypes A, B, and C was still endemic in the villages.<sup>2</sup> In these communities we found no evidence of chlamydial genital infection or associated ocular infection caused by *C trachomatis* serotypes D to K (Darougar *et al*, unpublished data). We were told however, that NGU was common in the urban population of Iran.

The present study was undertaken to investigate the prevalence of chlamydial genital infections and serotypes among men attending an STD clinic in Teheran.

### Patients and methods

One hundred and seventy-two consecutive male

patients who attended the Nejat STD clinic, Teheran, and who gave a history of urethral discharge, dysuria, or frequency of micturition were studied.

Urethral specimens were collected using a cottonwool swab.<sup>3</sup> Specimens were stored in 2SP transport medium containing antibiotics<sup>4</sup> and 3% fetal calf serum. They were transferred within one hour of collection into a liquid nitrogen refrigerator ( $-180^{\circ}\text{C}$ ) until they reached the laboratory in London where they were stored in a refrigerator at  $-70^{\circ}\text{C}$ . Methods of culture in irradiated McCoy cells and the identification of isolates have been described.<sup>5</sup>

Blood was taken by venepuncture; serum was separated, stored at  $-20^{\circ}\text{C}$ , and transferred within three days at an ambient temperature to London, where they were stored at  $-20^{\circ}\text{C}$ . All sera were absorbed with equal volumes of 40% (w/v) normal yolk-sac for 60 minutes and were then titrated at a starting dilution of 1/16 for IgG and 1/8 for IgM. A modified microimmunofluorescence (micro-IF) test<sup>6</sup> was used to detect type-specific antichlamydial IgG and IgM in sera. In the present study all sera were titrated against four pooled antigens; pool 1, *C trachomatis* serotypes A, B, and C; pool 2, *C trachomatis* serotypes D, E, F, G, H, I, and K; pool 3, *C trachomatis* LGV 1, 2 and 3; and pool 4, representative antigens from *C psittaci*.<sup>6</sup>

Isolates obtained in cell cultures were serotyped using a micro-IF test as described.<sup>7</sup>

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## Results

The ages of the 172 men ranged from 14 to 48 years with a mean age of 25 years. Of these men, 140 (81.4%) had been treated for confirmed or suspected urethritis within the previous year; 133 (77.3%) had been given tetracyclines, erythromycin, or a sulphonamide, and nine (5.2%) penicillin alone (table I).

TABLE I History of previous treatment with antibiotics of a confirmed or suspected urethritis in 172 men

History	No (%) of patients treated with:	
	Penicillin	Antichlamydial drugs*
Of antibiotic treatment:		
Within one month	6 (3.5)	48 (27.9)
Between one and three months	1 (0.6)	20 (11.6)
Between 3 and 12 months	2 (1.2)	63 (36.6)
Total	9 (5)	131 (76.2)

\*Tetracyclines or erythromycin or sulphonamides with or without additional penicillin

Cultural and serological evidence of infection with *C trachomatis* was found in 39 (22.7%) patients. Of these, 31 (18%) were infected with serotypes D to K and eight (4.7%) with serotypes A to C. There was no evidence of infection with lymphogranuloma venereum agents or *C psittaci*.

The culture results were considered invalid in 47 (27.3%) of 172 patients because of gross bacterial and fungal contamination or poor cell monolayers. *C trachomatis* was isolated from 11 (8.8%) of the remaining 125 cases. Chlamydia were isolated from one (2.1%) of 48 patients who had received antimicrobial treatment within one month, from three (15%) of 20 men who had been treated between one and three months, and from six (9.5%) of 63 of those who were treated between three and 12 months before examination.

Type-specific antibodies against *C trachomatis* serotypes D to K were found in the sera of 23 (15.7%) of 147 patients tested. Antichlamydial IgM, indicating current infection, and IgG were detected

in 17 (11.6%) and 14 (9.5%) sera respectively (table II). Of 48 patients who had been treated with antichlamydial drugs in the previous month, IgM reactive with *C trachomatis* was detected in 14 (29.2%) whereas *C trachomatis* was isolated in only one (2.1%) patient.

Type-specific antibodies against *C trachomatis* serotypes A to C were detected in eight (5.4%) patients (table II). Serological evidence of current or recent infection with these serotypes (antichlamydial IgG at a titre of  $\geq 64$  or IgM at a titre of  $\geq 8$ ) was found in three patients; they did not have clinical evidence of active trachoma.

Five urethral isolates were serotyped. Of these, two were identified as type E and the other three as serotypes G, H, and K.

## Discussion

The culture results were invalid in 27% of patients. This figure was appreciably higher than the rates of 4-8% from urethral specimens collected in London and tested in our laboratory.<sup>9 10</sup> This difference may have been due to variation in the bacterial flora of the urethra or sensitivity to streptomycin and vancomycin used in the transport medium.<sup>4</sup>

The chlamydial isolation rate of 9% obtained in Iranian patients was the same as that obtained from men with gonorrhoea attending an STD clinic in Kenya,<sup>11</sup> but it was much lower than the isolation rates of 30-50% commonly found in patients with NGU in Western countries.<sup>3 9 10 12</sup> This low isolation rate probably reflected the type of patients, the severity of the disease, or the treatment they received during their present infection.

The patients included in the study consecutively attended the clinic and gave a history of urethral symptoms. Routine laboratory investigations showed that in nearly half of the patients the urethritis was very mild or trivial (<10 polymorphonuclear cells/high-power field at  $\times 400$  magnification in the urethral smears). Studies have shown that in patients with a mild urethritis the chlamydial isolation rate is much lower than in patients with moderate to severe disease.<sup>9</sup>

TABLE II Titres of type-specific antichlamydial antibodies in sera from 147 men

Type of antibody	Total No (%) of positive sera	Antibody titres:						Total No (%) (IgG and/or IgM)
		8	16	32	64	128	256	
D-K								
IgG	14 (10)	ND	8	3	1	1	1	23 (15.7)
IgM	17 (12)	12	3	2	0	0	0	
A-C								
IgG	7 (5)	ND	1	4	1	1	0	8 (5%)
IgM	1 (1)	1	0	0	0	0	0	

ND = not done

Of the patients studied, 133 (77%) had been treated within the previous year for suspected or confirmed urethritis with drugs active against chlamydia. This finding suggests that these patients may have had recurrences or reinfections during this period. Studies by Alani *et al*<sup>9</sup> have shown that in patients with a history of previous episodes of urethritis chlamydial isolation rates are much lower than in patients infected for the first time.

Of 48 patients who had had treatment within one month of the examination, chlamydia were isolated from only one (2%) whereas type-specific IgM against serotypes D to K, indicating current infection, was found in 14 (29%); this difference was statistically significant ( $P < 0.001$ , McNemar test). In studies in Western countries, however, chlamydia have been isolated from the majority of patients in whom specific IgM is found in the serum.<sup>13 14</sup> These results suggest that in Iranian patients shedding of chlamydia from the urethra may have been suppressed by recent treatment with antichlamydial drugs.

*C trachomatis* serotypes E, G, H, and K were isolated from Iranian patients. In the Western world serotypes D, E, F, G, and K are common causes of genital infection whereas serotype H is less common.<sup>13 14</sup>

Serological evidence of current infection with serotypes A to C (trachoma agent) was found in three patients who had no evidence of active trachoma. In this study we were not able to isolate serotypes A to C from the urethra and therefore could not prove that these serotypes caused urethritis. Serotypes B and C have, however, been isolated from the genital tract.<sup>13 14</sup>

Examination of clinical records of the patients showed that 83% of them had had sexual intercourse with prostitutes within one month of the onset of urethritis. This finding suggests that in Teheran prostitutes are a major reservoir of chlamydial genital infection.

The results of this study indicate that in Iran chlamydial genital infection due to *C trachomatis* serotypes D to K does occur among the urban population. Although the chlamydial isolation rate in our patients was low we believe that had we selected patients with untreated primary but moderate to severe NGU the chlamydial isolation rate would have been much higher and probably nearer to the rates commonly found in Western countries.

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